

Amendments to the Specification:

Please insert the following new paragraph after the first full paragraph (lines 5-13) of page 17:

-- Fig. 8 shows a similar process to Fig. 3. At step S801, control command is entered for controlling zoom magnification and imaging area is calculated at step S802. At step S803, it is determined that whether there is overlap between limited area and imaging area. If it is determined at step S803 that there is overlap, the process proceeds to step S804 where it is determined that whether the controlled zoom magnification is greater than limit on zoom magnification. If it is determined at step S804 that the controlled zoom magnification is greater than limit, the process proceeds to step S805 where zoom target value is revised. If it is determined at step S803 that there is no overlap, the process advances to step S806. Also, if it is determined at step S804 that the controlled zoom magnification is not greater than limit, the process advances to step S806. At step S806, it is determined that whether checking of all limited areas is finished. If it is determined at step S806 that the checking is finished at step S806, the process proceeds to step S807 where it is determined that whether zoom target value has been revised. If it is determined at step S806 that the checking is not finished, the process goes back to step S802. If it is determined at step S807 that the zoom target value has not been revised, zoom magnification is controlled at step S808. If it is determined at step S807 that the zoom target value has been revised, the process goes back to step S802. --

Please replace the second full paragraph of page 17 beginning at line 14 through line 25 with the following amended paragraph:

-- Further, as shown in Fig. 9, this embodiment can be applied to a camera control system in which it is possible to control the camera control apparatus 101 from a remote operating terminal 102 via a network 103 such as a LAN (Local Area Network) or ISDN (Integrated Services Digital Network) line. A plurality of camera control ~~apparatus~~ apparatuses 101, 901 and operating terminals 102, 902 can be connected on the network 103 so that a desired camera control apparatus 101 can be controlled from any control ~~terminal~~ terminals 102, 902. Blocks shown in Fig. 9 that are identical with those of Fig. 1 are designated by like reference characters and need not be described again. --

Please replace the paragraph beginning at line 26 of page 17 through line 24 of page 18 with the following amended paragraph:

-- The operating terminal 102 includes a controller 125 for controlling the overall operating terminal 102, and a camera operating unit 124, which comprises a mouse and keyboard, for controlling panning, tilting and zooming of the camera 111. A control command that has been entered by the camera operating unit 124 is output to the camera control apparatus 101 via a communication interface 121. The camera control apparatus 101 has a communication interface 119 for receiving pan, tilt and zoom camera control signals output by the operating terminal 102 and outputting these signals to the zoom limiting processor 113, and the zoom limiting processor

113 executes processing similar to that described above. The camera control apparatus 101 further includes a video processor 118 for applying compression processing to an image signal picked up by the camera 111, converting the signal to a signal conforming to the network specifications, and outputting the signal from the communication interface 119 to the operating terminal 102. The operating terminal 102 further includes an image expansion unit 122 for expanding image data received at the communication interface 121, and a display controller ~~125~~ 123 for executing prescribed signal processing and causing a monitor 126 to display a sensed image. --

Please replace the second full paragraph of page 22 beginning at line 10 through line 22 with the following amended paragraph:

-- The client 1-2 will not be described. As in the case of the server, the client can also be implemented by a general-purpose information processing apparatus such as a personal computer. Compressed video data distributed from the camera server 1-1 is received through a communication control unit 1-21, expanded by a video expansion unit 1-25 and displayed on a video display unit 1-26. These processes are controlled by a camera operating unit 1-23 and a command generator 1-22. It is also arranged so that camera control and operations for storing and saving images into a storage unit 1-29 and a second storage unit 1-28 through a storage controller 1-27 can be performed by operating a user interface with which the client is provided. Control for display and manipulation of screens is performed by a display controller 1-24. --

Please replace the first full paragraph of page 23 beginning at line 3 through line 22 with the following amended paragraph:

-- As shown in Fig. 11, a video display area 2-1 is for displaying video, and a camera operation panel 2-2 is for operating a camera. The latter is displayed in a window format. The camera operation panel 2-2 has scroll bars 2-22, 2-23, 2-28 that make it possible to manipulate camera pan angle, tilt angle and zoom magnification. The scroll bar 2-22 for manipulating pan angle has a rectangular scroll box, which is displayed in the bar, for being moved to the left or right (generally referred to as "dragging") by a pointing device such as a mouse, whereby a command designating the pan angle is sent to the camera server. The position at which the scroll box is displayed indicates the present position in an area in which manipulation of the pan angle is limited. The scroll bar 2-23 is for manipulating tilt angle, and the scroll bar 2-28 is for manipulating zoom magnification. The method of manipulation and the meaning of the positions of the scroll boxes are similar to those of the scroll bar 2-22 for pan angle. A start save button 2-11 and a end save button 2-12 are provided to start and end the image save operation, respectively. Buttons 2-24, 2-25, 2-26, 2-27 are provided for other necessary functions. --

Please replace the paragraph beginning line 20 of page 25 through line 14 of page 26 with the following amended paragraph:

-- Since the pan and tilt angles of the camera 1-11 can be changed, the user of the client would naturally think that the shooting direction (angle) of one camera could be varied over an area

having a rectangular shape. In other words, it would seem odd to the user if one camera could shoot in an L-shaped area and in another area separated from it, as shown in Fig. 18. In order not to give the user such an odd impression, therefore, this embodiment is so adapted that an area in which image pick-up is possible is divided into several rectangular areas and virtual cameras are assigned to respective ones of these rectangular areas (the three areas indicated at 9-11, 9-12 and 9-13 along with a horizontal line 9-0 and a vertical line 9-1 in Fig. 18). As a result, as far as the user is concerned, it appears just as if a plurality of (three) cameras (virtual cameras) have been connected to the camera server 1-1 and just as if the angles of these cameras can be changed freely within the respective rectangular areas. The user, therefore, does not receive an odd impression. The camera names displayed in the pull-down menu 2-31 of Fig. 11 thus indicate virtual cameras. --

Please replace the first full paragraph of page 30 beginning at line 1 through line 22 with the following amended paragraph:

--When the camera control server process 3-11 is started up (step S400), after executing initialization processing (step 401), the camera-status notification process 3-12 is generated (step S402) and a camera-control connect request [(1) in Fig. 17] from the client process 3-31 is awaited (step S403). When there is a connect request from the client process 3-31, connect acceptance processing (for sending back Ack) is executed (step S404) and camera control commands [(2) to (4) in Fig. 17) sent from the connected client process 3-31 are awaited (step S405). In connect acceptance processing, the client is notified of the list information concerning the virtual cameras possessed by the camera server, as described earlier. That is, the list information is transferred to the client. At this time a timer is set. At step S406, it is determined that whether control waiting time has elapsed a predetermined time period. If a certain fixed time (referred to as "control waiting time") elapses, the camera control connection is severed (step S407). If, however, the control waiting time has not elapsed the predetermined time period, the process advances to step S408 where it is determined that whether there is received a control command. --

Please replace the paragraph beginning line 18 of page 30 through line 8 of page 31 of the specification with the following amended paragraph:

-- If it is determined at step S408 that camera control commands [(2) to (4) in Fig. 17] are received, the camera/pan-head controller 1-13 controls the zoom magnification of the video camera 1-11 and the pan and tilt angles of the movable pan head 1-12 in accordance with these commands (step S409). Until control waiting time elapses, camera control commands are accepted from the client process 3-31 and camera control conforming to the commands is performed through the command interpretation/execution unit 1-17 and camera/pan-head controller 1-13. The details of processing conforming to control commands are illustrated in Fig. 14. In order to simplify the description, it is assumed that the camera control commands are as follows:

pan-angle change command

PAN θ

tilt-angle change command	TIL ϕ
zoom-magnification change command	ZOM α

If, however, it is determined at step S408 that there is no control command is received, other processing is executed (step 410). –

Please replace the paragraph beginning line 19 of page 31 through line 8 of page 32 of the specification with the following amended paragraph and two added paragraphs:

-- Upon starting a control command processing (step S500), it is determined at step S501 that whether a camera is switched (step S501). When a camera changeover request command is issued, a control range corresponding to the identification number of a virtual camera is read out of the camera control-range limiting list 3-43 and set in the camera- control limited range register 3-45 and camera-status register 3-44 (step S502). Next, after turning on video-display inhibit flag (step 503), pan, tilt and zoom values calculated in the next procedure are initialized as the initial position of the virtual camera (step S504). The initially set values of the virtual camera are values at the center of the limited range in regard to the pan and tilt angles and minimum magnification of the limited range in regard to the zoom magnification. However, it is permissible to decide the pan and tilt angles and the zoom magnification of the limited range in advance and then set the pan and tilt angles and the zoom magnification to these values. The flow then advances to step S505 to turn off video-display inhibit flag ending the process (step S540).

If it is determined at step S501 that the camera is not switched, the flow advances to step S510 where it is determined that whether the pan/tilt command is received. If it is determined at step S510 that the pan/tilt command is received, the flow advances to step S511 where it is determined that whether pan and tilt angles are within a limited range. If it is determined at S511 that the pan and tilt angles are not within the limited range, the pan and tilt angles are reset so as to these values fall within the limited range (S512). After the resetting (S512), the pan and tilt angles are controlled at step S513.

If it is determined at step S510 that the pan/tilt command is not received, the flow advances to step S520 where it is determined whether zoom command is received. If it is determined at step S520 that the zoom command is received, it is determined whether zoom magnification is within limited range (S521). If it is determined at step S521 that the zoom magnification is not within the limited range, the zoom magnification is reset so as to fall within the limited range (S522) and then the zoom magnification is controlled (S523). If it is determined at step S521 that the zoom magnification is within the limited range, the flow advances to step S523. If it is determined at step S520 that the zoom command is not received, the flow advances to step S530 where other control processing is executed. –

Please replace the paragraph beginning line 22 of page 33 through line 9 of page 34 of the specification with the following amended paragraph:

-- The status of the camera is checked continuously while the camera-status notification process 3-12 generated at step S402 is operating. That is, upon starting the status checking process (step S420), an initialization processing is executed (S421), and camera pan and tilt angles and zoom magnification (= p, t, z) are read in by making an inquiry of the camera/pan-head controller 1-13, these are written to the camera-status register 3-44 (step S422) and the status of the video-display inhibit flag 3-41 is checked (step S423). If the flag is ON, it is construed that the camera status is "CAMERA BEING SWITCHED" (virtual-camera identification number n = -1) (step S424) and the client process 1-2 that is transmitting video is notified of the camera status [format of (9) in Fig. 17] (step S425). --

Please replace the paragraph beginning line 13 of page 34 through line 2 of page 35 of the specification with the following amended paragraph:

-- When the video server process 3-21 is started up (step S600), after executing initialization process (step S601), the video acquisition/transmission process 3-22 is generated (step S602) and an event from the video server process 3-21 is awaited (step S603). If the event is a video-display start request command [(7 6) in Fig. 17] (step S604), then the packet transmission- source address contained in the video-display request packet is checked and added to the video transmission destination list 3-42 (step S605). If the event is a video-display stop request command (step S606) [(7) in Fig. 17], then, in similar fashion, the packet transmission-source address contained in the video-display request packet is checked and deleted from the transmission destination list 3-42. It should be noted that the address of the video-transmission destination is retained in the video transmission destination list 3-42 in a list format. If, however, it is determined at step S604 that the event is not a video-display request, the flow advances to step S607 where it is determined that whether it is a video stop request. If it is the video stop request, the request is deleted from transmission destination list at step S608. If it is determined at step S607 that it is not the video stop request, other process is executed at step S609. --

Please replace the first full paragraph of page 35 beginning line 3 through line 11 with the following amended paragraph:

-- When the video acquisition/transmission process 3-22 is started up, the following operation is repeated: The upon starting (S620) and executing initialization processing (S621), the camera video is captured as a frame (step S622) and compression is carried out (step S623). If the video-display inhibit flag is ON (step S624), the compressed video data is converted to the packet formation shown at (10) in Fig. 17 and is transmitted to the plurality of addresses in the video transmission destination list 3-42 (step S625). --

Please replace the third full paragraph of page 35 beginning line 15 through line 21 with the following amended paragraph:

--When this process is started up (S700), initialization processing is executed (step 5701) and a video-display start request is transmitted to the camera server corresponding to the address (IP

address, here assumed to be "ADDR_C") of the connected camera server 1-1 (step S702). The packet format at this time is as indicated at (6) in Fig. 17. --

Please replace the second full paragraph of page 36 beginning line 6 through line 25 with the following amended paragraph:

-- If the user clicks the control start button 2-21 (step S706), the user verifies, based upon the control privilege flag 3-51 (a variable reserved in the RAM possessed by the client), whether the prevailing state is one in which camera control has already started (step S707). If camera control is already in progress, processing returns to step S705. If control is not in progress, then the camera-control connect request [(1) in Fig. 17] is sent to the camera control server process (step S708) and acknowledgment (Ack) is awaited (step S709). If it is determined at step S710, Ack is sent back, a connection is established with respect to the camera control server process, the control privilege flag 3-51 in the storage unit 1-29 of the client apparatus is turned ON (step S711) and operation at the camera operation panel 2-2 (the buttons for changing shooting direction and the scroll bars) is enabled (S712). It should be noted that the camera control server process accepts a connect request only at the time of step S403 for camera-control connect request standby. If it is determined at step S710 that Ack is not sent back, the flow advances to step S713 updating the control status. --

Please replace the second full paragraph of page 37 beginning line 18 through line 22 with the following amended paragraph:

-- In response to a client-process terminate request (step S726) issued by operation using the menu or the like, the camera-control disconnect command [(8) in Fig. 17] is issued (step S728) and the client process is terminated (step S729). If, however, the client-process terminate request is not issued, other processing is executed (step S727). --

Please replace the first full paragraph of page 38 beginning line 4 through line 25 with the following amended paragraph:

-- In a case where the arriving packet is for camera-status notification [(9) in Fig. 17] (step S724), the display positions of the scroll boxes in the scroll bars 2-22, 2-23, 2-28 for manipulating the pan and tilt angles and zoom magnification are changed to the corresponding positions using parameters contained in the packet updating the status display (step S725). Further, the camera name corresponding to the identification number of the virtual camera is displayed on the camera changeover button 2-30. (In a case where another client process is remotely controlling the camera, this information is updated.) The association between the identification number of the virtual camera and the camera name makes use of the corresponding relationship of which notification has been given by the camera-status notification process 3-12. It should be noted that when the identification number of the virtual camera is -1 (i.e., when the camera is currently moving within the shootable range of the virtual camera), it is construed that the operation for changing over the virtual camera is currently being carried out and a message to this effect is displayed on the video display panel 2-1. --